

Does the use of silvopastoral systems increase or reduce the levels of parasitism in cattle in Colombia?

The Eje Cafetero is famous, as its name suggests, for growing coffee. However, the instability of coffee prices drove some landowners to switch to cattle as an alternative product. The prevailing attitude was that "not a tree should be left standing", making it easier to monitor the cattle, and leading to widespread deforestation. After 30 years of agricultural intensification, the effects on the environment began to show: soil compaction, erosion, organic and chemical pollution of water-systems and loss of biodiversity, among others. In 2003, Fundación CIPAV and other NGOs, with funding from the World Bank, began to convert open pasture to silvopastoral systems (SPS). SPS is the practice of combining forestry and livestock to provide increased biodiversity, production and animal welfare.



A Curious Colombian Cow – Most cattle in the hot country are Brahman, but dairy cows are F1 crosses with European breeds giving rise to Brangus and Brafordts. The cow pictured is a Jer-Hol.

SPS benefits the animals that inhabit them, but the wider hope is that investment in sustainable agriculture systems will provide greater food security in the face of extreme climate events (such as the El Niño drought) and improve the socioeconomic conditions of small farmers. The last few years have been turbulent for the Colombian countryside, punctuated by widespread strikes and violent confrontations with the state. Increasing the financial viability and sustainability of farming will be particularly important to aid political progress.

In partnership with Dr Julián Chará, (*Fundación CIPAV*), I developed a project to compare the levels of parasitism between cattle grazing SPS and open pasture (OPS). Dr Chará had previously been involved in a project which found that horn fly numbers are lower in SPS than OPS, and hypothesised this could be due to increased populations of dung beetles damaging fly eggs and removing faeces from pasture.

After scouring Bogotá for equipment and chemicals, I set off for Alcalá, a small town in the Eje Cafetero. I spent my first week visiting farms involved in CIPAV's program. At each farm I was introduced by my assistant Jaime. Over a cup of sweet, black coffee we sat down to explain the project and ask about parasite control on the farm. Colombia is a country of extremes and this was reflected in the enormous variation between farms (and farmers).

One farm was a smallholding of less than 10 cattle. I sat and listened to the old 'campesino' farmer explaining that he hasn't been able to sell livestock since the new movement permits have to be paid with a debit or credit card, neither of which he has access to. The next was a modern ranch with hundreds of cattle. I sat and listened to the owner lamenting that he hasn't been able to sell any horses in the US since they were infected with *Babesia* spread by the ever-abundant ticks.



A recently grazed SPS paddock next to a fully grown one, planted with *Tithonia diversifolia*. Other SPS farms use *Leucaena leucocephala* as a forage plant.

From the 29 farms I visited 12 were chosen for sampling (5 SPS and 7 open pasture farms). I took samples from 10 cattle on each farm noting their age, breed and BCS. Every cow was carefully checked for ticks for 5 minutes, removing them and storing them in alcohol. After the tick grooming, a faecal sample was taken from each cow. All the samples were stored in a cool box for later analysis in Bogotá. I preserved a faecal sample in formalin as an insurance policy in case the cool box didn't stay cool or there was a problem with transport back to Bogotá. During my stay a national truckers' strike was escalating and there were rumours that roadblocks would be set up to prevent traffic and food reaching the capital.



Beef cows pausing from grazing to check out the visitors in an SPS paddock. Farmers report that they preferentially graze the *T. diversifolia*.

The analysis of the faecal samples passed smoothly, but when it came to the ticks my equipment and knowledge of tropical species failed me. I was advised by a former colleague to call the Veterinary Parasitology Laboratory at the Universidad Nacional de Colombia. At most, I was hoping for some pointers or a reference book, but instead Dr Jesús Cortés and his assistant Oscar Cruz, very kindly offered their stereo microscope and expertise, without which the identification of over 2500 ticks would have been a very painful (if not impossible) process!

I've spent the last two years living and working in Colombia. Once I'm back in the UK, I will quickly forget the inconveniences and frustrations - leaving the more persistent memories of Colombia's beauty and intrigue. I'm sure I won't be able to stay away for long.

I'm grateful to the BVA trustees and the Harry Steele-Bodger Memorial Scholarship, without whom this, project would not have been possible. I would also like to thank CIPAV for supporting me, and providing me with a place to stay and contact with their various projects in the region.



A heavy tick burden in a dairy cow. For each engorged female visible, there are many more small ones attached. It's estimated that as few as 20 – 30 ticks can affect an animal's production.



A photo doesn't do the scenery of the Eje Cafetero justice. The panorama of rolling hills framed by the Cordilleras of the Andes provided a stunning background